# Curriculum Guidelines

The content in this portion of the Technology 2001 Report was created and published in 1995. Presently a curriculum committee is being convened to update the document. The release of the revised Curriculum Guide is scheduled for early 2002, and will include mapping of the content objectives to the International Technology Education Association (ITEA) and the Idaho Achievement Standards. Also included in the release are additional content areas such as Networking and Related Technologies, Bio-technologies and New and Emerging Technologies.

## 01.0 EXPLORING TECHNOLOGY

**Prerequisite**: None
Exploring Technology is designed to introduce students to basic technological principles, processes, and skills such as design and problem solving, team decision making, information gathering, and safety. A systems model of communication, manufacturing, power/energy and transportation and construction is presented. Students are exposed to sketching, technical drawing, screen printing, logo and poster development, building of model rockets and bridges, experimentation with computer-assisted graphics, computer-aided design software, electronic devices, and video production. This program is designed to develop an appreciation of technical fields and occupations while learning about skills essential to these systems.

## 02.0 FUNDAMENTALS OF TECHNOLOGY

**Prerequisite**: None
Fundamentals of Technology is a prerequisite course for most of the Technology Education systems. Communication skills and tools are the major focus of this course. These same skills are central to all subsequent technology courses. The computer and other electronic devices are necessary for teaching an understanding of contemporary communications, manufacturing, power/energy/transportation and construction systems. An engineering focus of problem solving requires students to define a given problem, conduct appropriate research, develop solutions to the problem, construct prototypes, and evaluate their work.

Fundamentals of Technology is designed to introduce students to those principles and skills used in subsequent technology courses. Students learn to sketch solutions to problems, create technical drawings and presentations, build models, and apply creative problem solving methods. Emphasis is placed on accessing and communicating information, using simple and complex tools in a safe manner, and increasing the students' awareness of the historical and contemporary implications of technology. Students are introduced to computer-aided graphics, design software, and computer-aided manufacturing. Students develop an understanding of the tools, techniques, and processes of technology using design principles, computers, problem solving and model making.

## 03.0 COMMUNICATION SYSTEMS I

**Prerequisite**: Fundamentals of Technology

Communication Systems I is designed to develop an understanding of contemporary communication principles and devices. Students develop graphic and electronic communication projects through the use of various media. Activities typically include engineering and technical concepts of sketching, drafting, screen printing, computer-assisted graphics, technical presentations, photography, audio and video production. Students learn to apply the elements of good design to communication products.

**04.0 COMMUNICATION SYSTEMS II**

**Prerequisites**: Fundamentals of Technology
Communication Systems I
Communication Systems II uses the skills and insights gained from Communication Systems I. Students develop detailed and integrated communication projects and concepts. Students produce a variety of technical presentations using telecommunications, computer applications, graphics, and photography. This course is designed for students planning to enter business, education, marketing, sales, and advertising or planning to major in science, engineering, or technical fields related to communications.

**05.0 MANUFACTURING SYSTEMS I**

**Prerequisite**: Fundamentals of Technology
Manufacturing Systems I is designed for students to study general concepts and principles of manufacturing systems. Working individually and in teams, students design products, develop and conduct market surveys, develop financial and personnel strategies, advertise, market, and produce products using contemporary manufacturing methods. Designed for students interested in product design, creative problem solving, creation of prototypes, computer-assisted design and manufacturing, basic entrepreneurial skills, and engineering concepts.

**06.0 MANUFACTURING SYSTEMS II**

**Prerequisites**: Fundamentals of Technology
Manufacturing Systems I
Manufacturing Systems II continues to build on the knowledge and skills gained from Manufacturing Systems I. Students pursue more detailed and integrated manufacturing and production projects. Students continue to use creative problem solving skills, design tools and processes, and apply manufacturing techniques with increasing sophistication. Projects are designed and produced using computer-assisted manufacturing applications, computer numerically-controlled machines and robotics. This course has been developed for students pursuing careers in manufacturing as a designer, drafter, industrial manager, technician or engineer.

**07.0 CONSTRUCTION SYSTEMS I**

**Prerequisite**: Fundamentals of Technology
Construction Systems I is designed to introduce classical and contemporary elements, principles and processes of structural systems. Architectural and engineering subjects are studied through research, design, project development and assessment. Students explore the relationship of materials, form, function, and culture of notable past and present structures through practical applications and modeling techniques.

## 08.0 CONSTRUCTION SYSTEMS II

**Prerequisites**: Fundamentals of Technology
Construction Systems I

Students of Construction Systems II continue their study of structural systems through research, developing solutions, creating designs, building models and critiquing their work. Working individually and as team members, students apply the skills and insights from the previous course to pursue progressively demanding concepts and relationships of structural systems. Students are given greater freedom to explore individual topics of interest within the area of structural systems.

## 09.0 POWER/ENERGY AND TRANSPORTATION SYSTEMS I

**Prerequisite:** Fundamentals of Technology

Students enrolled in this course will explore sources, storage, transportation, consumption, control, environmental impacts, and conservation of power, energy and transportation. Land, ground effects, water, air, space and intermodal transportation systems will be explored with practical activities emphasizing relevant scientific and engineering concepts. Activities include defining problems, designing prototypes, using computer-assisted applications, constructing models, and testing prototypes using appropriate tools such as wind tunnels and performance tests.

## 10.0 POWER/ENERGY AND TRANSPORTATION SYSTEMS II

**Prerequisites**: Fundamentals of Technology
Power/Energy and Transportation Systems I

Power/Energy and Transportation Systems II students will continue to build on their knowledge of transportation systems by experimenting with increasingly complex systems and concepts. Guidance, intermodal and urban transportation systems are explored. Students continue to seek solutions to problems through research and design, prototype development and experimentation. Students perform technological assessments on transportation topics of interest.

## 11.0 EMERGING TECHNOLOGY STUDIES

**Prerequisite**: Fundamentals of Technology

Emerging/Engineering Technology Studies provides an opportunity for students to research and experiment with a technology-related topic of their choice. Topics may be chosen using the knowledge, skills and insights gained from previous vocational and academic courses, or from the latest information available in professional journals, Internet databases, or professionals in the field. Students work on an individual or small group project under the guidance of a technology teacher with input and involvement from other from other vocational and/or academic teachers and adult mentors. Students investigate technological concepts and apply the tools of technology to better understand other fields of study. The topic of study must be approved by the teacher in accordance with local established guidelines and criteria. Examples of projects might include: extensive research on lasers, fiber topics; biotechnology experiments; production of a multimedia project dealing with an important social issue related to technology; an original technology-related multimedia production.

## 12.0 PRINCIPLES OF TECHNOLOGY I

Prerequisite: None

Principles of Technology I provides the student with an understanding of the principles and concepts of technology and the mathematics associated with them through hands-on experimentation. Technical instruction on force, work, rate, resistance, energy, and power provides students with an understanding of essential concepts found in science and technology. Abstract concepts and models are stressed through student experimentation and observation. Especially designed for students planning technical, engineering, or science related careers.

## 13.0 PRINCIPLES OF TECHNOLOGY II

**Prerequisite**: Principles of Technology I

Principles of Technology II is a continuation of the first level. It provides instruction and experimentation with force, transformers, momentum, waves and vibrations, energy convertors, transducers, radiation theory, optical systems and time constants. Students continue their hands-on activities with increasingly complex phenomena.